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Kinesys Libra Cell

Operating Manual
[ORIGINAL]

A digital load monitoring shackle

TAIT accepts no liability for any consequences resulting from inappropriate, negligent, or incorrect use of the equipment.

The contents of this manual are believed to be correct at the time of printing. In a commitment to a policy of continuous development and improvement, TAIT reserves the right to change the specification of the product or its performance, or the contents of this manual, without notice.

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1. Introduction

1.1 Product description

The Kinesys Libra Cell is a load monitoring shackle that forms part of the Kinesys Libra system. It must be used in conjunction with, at minimum, either the Libra Pro or Libra Basic distribution units, and can also be used with other load monitoring devices such as Libra Node, LibraSplit, and Libra WiFi. For more details on the operation of these devices refer to the relevant operating manuals.

As demand for EN17206 compliant systems increases around the world, there are many fixed-speed systems that no-longer meet the desired requirements of this standard. Compliance can be achieved by deploying a combination of the Kinesys DigiHoist Controller and Libra Cell. For rigging applications using variable speed hoists, Apex offers a straightforward and EN17206-compliant system.

The Libra Cell is available the following two variants:

Variant	Load capacity (kg)	Load capacity (lbs)
3,35 t	3250	7165
4,75 t	4750	10472

The Libra Cell features a digital data connection and an LED display with a load readout (available in lbs or kg) within a simple menu system. The load pin is designed to work exclusively with the Crosby safety shackle. The shackle maintains a safety factor of 5:1 up to the full rated load.

Both the 3,25 t and 4,75 t versions allow a 10:1 safety factor to be applied while still allowing sufficient capacities to rig one and two tonne points respectively.

The Libra Cell can resolve down to 1 kg (2.2 lbs). Due to limitations in the manufacture of the Crosby shackle, the manufacturer specifies an accuracy of 2% of the current load or 20 kg (44 lbs), whichever is the greater value.

1.2 Scope and purpose

This manual explains the basic operation of the Libra Cell and how to alter the settings using the menu.

This manual applies to software versions 3.21 and later.

The equipment described in this manual may only be operated by personnel qualified to do so. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with this and associated equipment.

1.3 Support requests

For technical support on this product, please use the following contact details:

support@taittowers.com
Tel: +44(0) 20 8481 9850

To resolve your support request as quickly as possible, please provide the following information, if available, when contacting Kinesys:

- Site name, address, machine location details and your contact details.
- As much detail as possible on the behaviour observed, including any unusual changes in behaviour that are different from normal operation and any environmental conditions that may be a factor (e.g. fluctuations in temperature and water damage).
- Details on the behaviour that should have been expected.
- The exact steps required that produce the issue.
- Any solutions to fix the issue that you have already tried.
- Any workarounds that you have found.
- Equipment item numbers and serial numbers, such as those displayed on the identification plates/labels.
- Version numbers of any software being used.
- Any screen shots, photographs or videos of the issue.

2. Safety information

2.1 Safety regulations

The following regulations serve as the basis for assembly, installation, certification and maintenance of automation equipment within the area of the European community. For countries other than those mentioned, local legislation and directives may apply in addition to or in place of the European regulations as stated in this manual.

The manufacturer's guarantee depends on the consideration of these regulations and the operating instructions.

European directives

2006/42/EC	EC - Machinery Directive
2014/30/EU	EC - EMC Directive
2014/35/EU	EC - Low Voltage Directive

BGV accident prevention regulations (Germany only)

DGUV Vorschrift 3 (BGV A1)	Principles of accident prevention
DGUV Vorschrift 3 (BGV A3)	Electrical facilities and equipment
DGUV Vorschrift 52 (BGV D6)	Accident prevention regulation for use in crane systems
DGUV Vorschrift 54 (BGV D8)	Accident prevention regulation for electric winches, lifting and pulling equipment
DGUV Regel 100-500 (BGR 500)	Hoisting accessories
DGUV Grundsatz 309-001 (BGG 905)	Principles for crane inspections

Harmonized regulations

EN ISO 12100	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN 14492-2	Cranes - Power driven winches and hoists
EN 818-7	Short link chain for lifting purposes; Fine tolerance hoist chain, Grade T
EN ISO 13849-1 & 2 / BS EN 62061	Safety of machinery - Safety-related parts of control systems; General principles for design
EN 60034-1	Rotating electrical machines; Rating and performance
EN 60034-5	Rotating electrical machines; Degrees of protection provided by the integral design of rotating electrical machines
EN 60204-1	Electrical equipment of machines, General requirements
EN 60204-32	Electrical equipment of machines; Requirements for hoisting machines
EN 60529	Degrees of protection provided by enclosures (IP-Code)
EN 60947-1	Low-voltage switchgear and control gear
EN 61000-6-2	Electromagnetic compatibility; Immunity for industrial environments
EN 61000-6-4	Electromagnetic compatibility; Emission standard for industrial environments
EN 82079-1	Preparation of instructions for use - Structuring, content and presentation
UL 508A	Construction of Industrial Control Panels

European regulations	
EN 17206	Machinery for stages and other production areas; Safety requirements and inspections

Regulations and technical specifications	
FEM 9.511:1986	Rules for the design of series lifting equipment; Classification of mechanisms
FEM 9.683:1995	Series lifting equipment; Selection of hoisting and travelling motors
FEM 9.751:1998	Series lifting equipment; Power driven series hoist mechanisms; Safety
FEM 9.755:1993	Serial hoist units; Measures for achieving safe working periods

2.2 Safety warnings

IF IN DOUBT ABOUT ANY ASPECT OF MOVING OBJECTS, ALWAYS SEEK PROFESSIONAL ADVICE BEFORE OPERATION.

Make sure this Operating Manual is always kept in a complete and fully readable condition and that it is always accessible to all operators of the equipment.

Prohibitions of operation

- **Do not use the Kinesys LIbra Cell if it does not appear to be in 100% working order.**
- **Do not use the Libra Cell if the five-digit identifier on the Crosby shackle and load pin do not match - refer to section 4.1.1 for details.**
- **Do not attach a load to the Libra Cell higher than the rated load.**

2.3 Visible damages

If any damage or breakages are detected during operation or during tests, do not operate the Kinesys LIbra Cell until it has been repaired and a qualified person has checked and approved it.

2.4 Spare parts

Only original fixing components, spare parts, and accessories listed in manufacturer's spare parts catalogue are acceptable for use. The manufacturer's guarantee is given for those spare parts only. The manufacturer cannot be held responsible for any damages due to the use of non-original parts or accessories.

For a full list of available spare parts, refer to section 8.2.

3. Product overview

3.1 Mechanical components

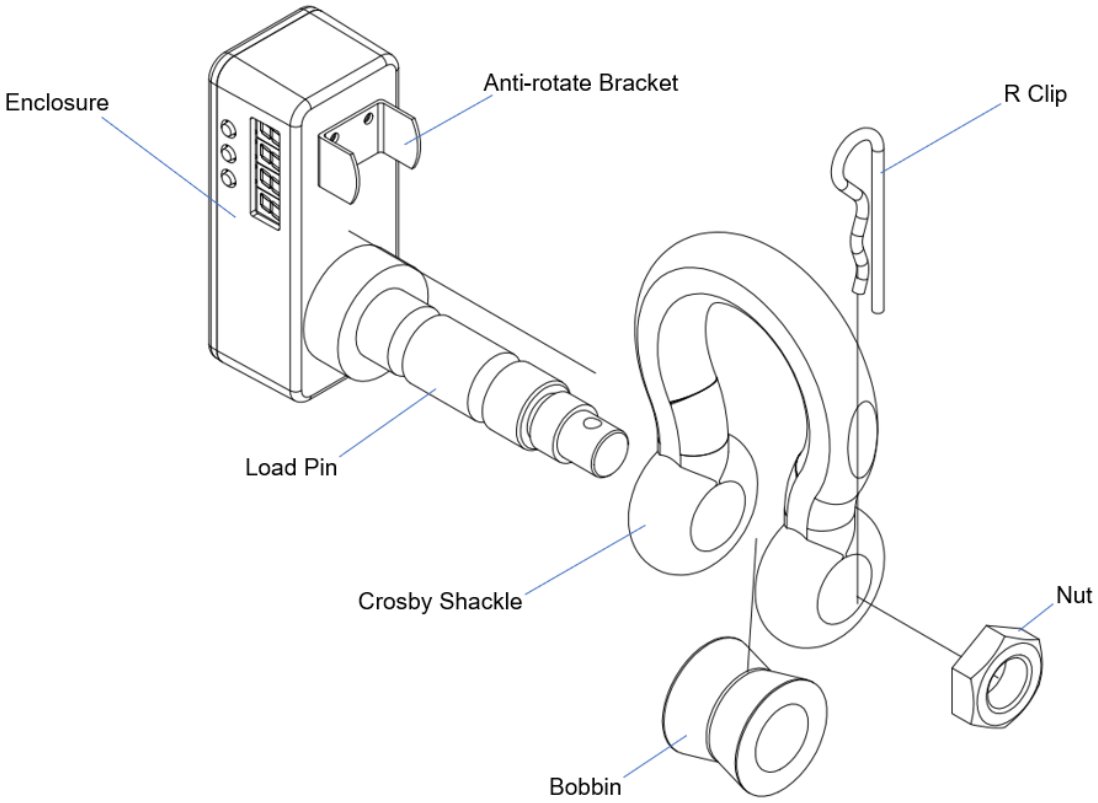

Figure 1. Mechanical components

3.2 Buttons and display

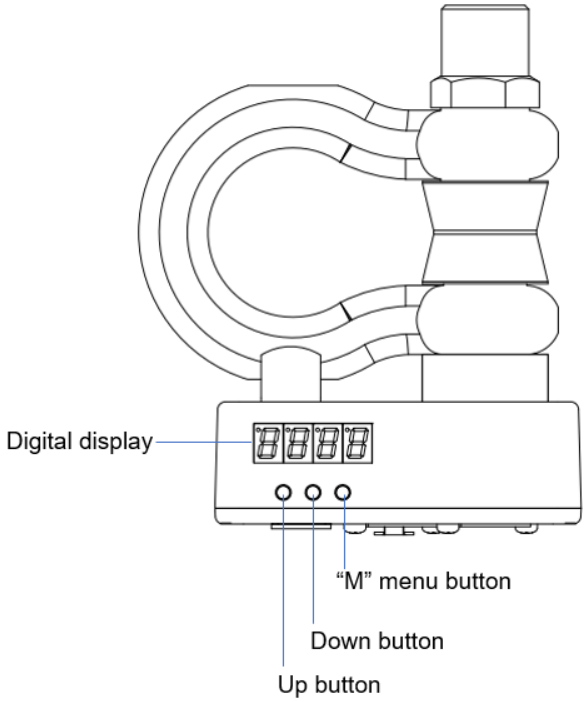

Figure 2. Buttons and display

4. Installation

4.1 Crosby shackle and load pin configuration

4.1.1 Five-digit Identifiers

The five-digit identifier on the Crosby shackle and load pin must always match on the Libra Cell as this ensures optimum performance and safety. If they do not match do not use the Libra Cell.

Libra Cell units manufactured between 2011 and August 2024 are tagged with a unique five digit identifier. This identifier is shown on the tag of the Crosby shackle and etched onto the load pin. Some Crosby shackles may also be marked with permanent marker.

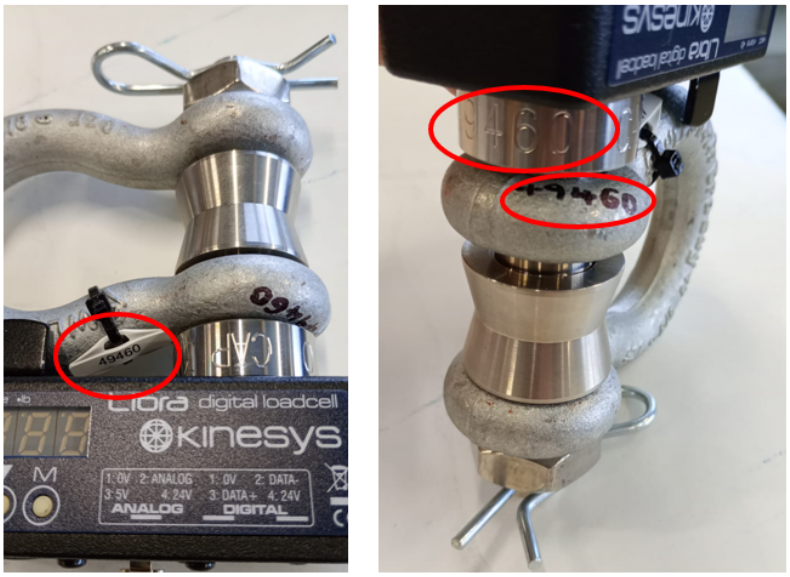

Figure 3. Five-digit identifier locations

Libra Cell units manufactured after August 2024 do not have a tag but instead have an identifier etched onto the shackle with the letter "A" as a prefix. The number always matches the identifier on the load pin with the exception of the "A".

4.1.2 Shackle position

The Crosby and Kinesys logos must be on the same side of the LibraCELL as shown below. The five digit identifier tag must always be on the inside of the Crosby shackle.

LibraCELL with Crosby shackle fitted correctly

LibraCELL with Crosby shackle fitted incorrectly

Figure 4. Crosby shackle position

4.1.3 Nut position

The nut that holds the Crosby shackle and load pin together must always be fully tightened to ensure the shackle sits correctly on the load pin. Once the nut is installed, the ‘R’ clip must be inserted through the small opening in the nut to ensure full tightness.

Figure 5. Nut correctly tightened

4.2 Cable connections

The Libra Cell features two XLR4 ports for power and data cable connections. The output is in the centre of the casing.

Older versions feature a 4-pin analogue connection. This is now discontinued and blanked off on newer models.

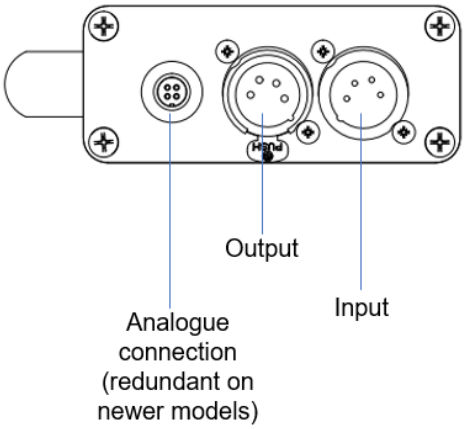

Figure 6. Connections

Power must come from an external source, such as Libra Pro or Libra Basic, into the input of the first Libra Cell in the chain. The output of each cell may then be connected to the input of another in a daisy-chain formation.

4.3 Powering On

The Libra Cell powers on as soon as it receives power from an external source such as Libra Pro or Libra Basic. To indicate that power is connected to the Libra Cell, the small LED in the top left of the display will flash continuously.

When the Libra Cell is powered on, it initiates an internal self-calibration process. While this is happening, the unit will display its firmware version number. Once the calibration is complete, the unit will then switch to the default display.

4.4 System example

The system example below shows common elements that make up a LIbra system and the connections that must be made.

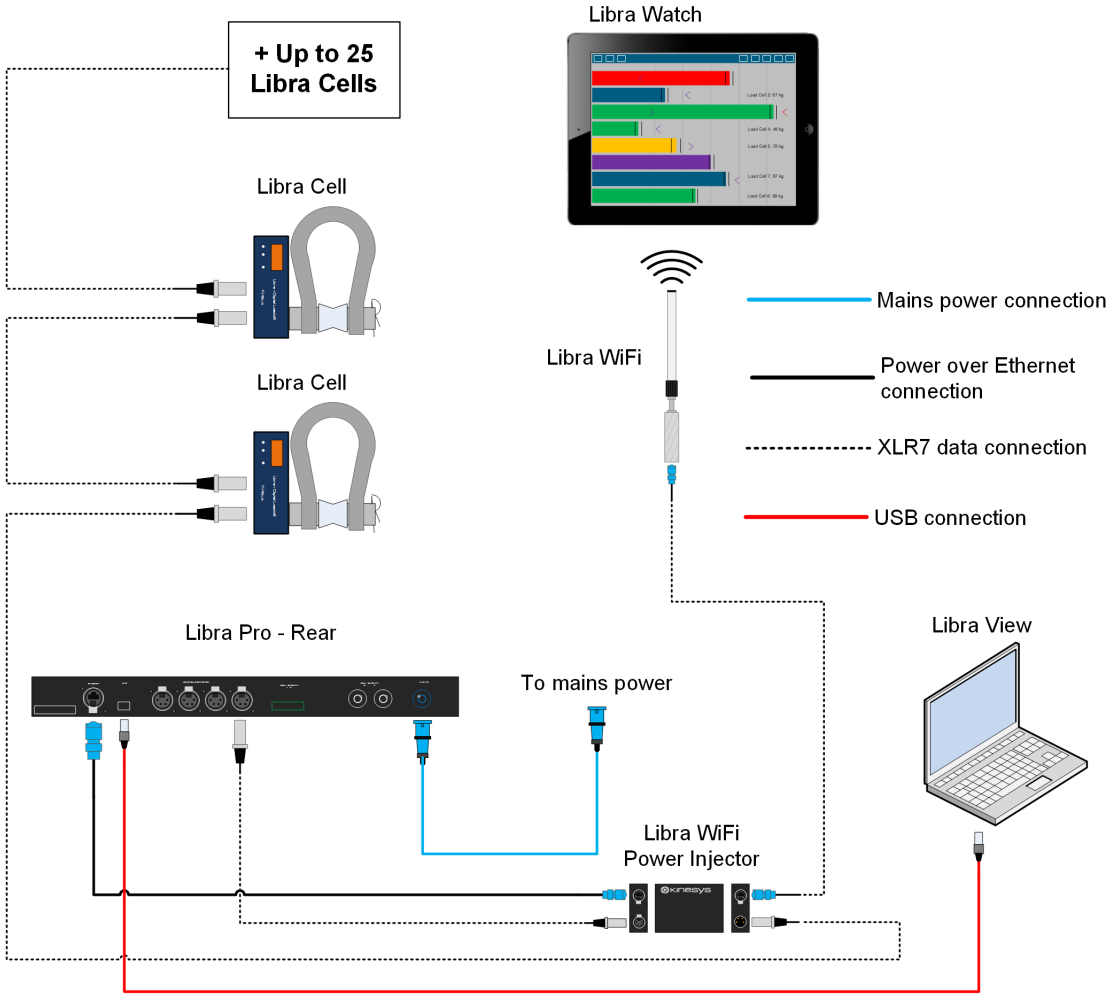

Figure 7. Libra system example

5. Display overview

5.1 Default display

The default display shows the current load in kg. The activity indicator in the top corner of the display will flash once a second to indicate that the unit is working correctly.

The tare indicator will illuminate if the unit has a tare offset value set. This indicates that the load being displayed is the total load minus the tare value.

If the lb indicator is illuminated it means the unit is in imperial mode and is currently displaying the load in lbs. When in imperial mode, values entered for tare, MIN and MAX will also be in lbs.

If the displayed load is above the maximum trip value, the display will flash alternately between the load and the message “MAX”. If the displayed load is below the minimum trip value the display will flash alternatively between the current load and the message “MIN”.

When in the default display mode, and if no trips are displayed, pressing the up button will display the tare offset. Pressing the down button will display the comms address.

5.2 Factory defaults

If the Libra Cell is powered on with the M button pressed, it will revert to factory default settings. Calibration and offset settings will be preserved.

5.3 Editing parameters

5.3.1 Parameter List mode

Pressing and holding the M button for two seconds after powering on will cause the display to enter the Parameter List mode. In this mode, various parameters can be viewed and changed. The display will alternate between showing the parameter name and its value. Pressing the up and down buttons allow different parameters to be viewed. Pressing the M button again for two seconds will revert to the default display.

5.3.2 Parameter Edit mode

When the desired parameter is selected in parameter list mode, pressing the M button will cause the display to enter Parameter Edit mode. If the currently selected parameter cannot be changed the display will read " – " for as long as the M button is pressed. If the currently selected parameter can be edited, the display will show its value and the up and down buttons can be used to change the value.

Pressing the M button for less than two seconds will save the changed parameter value and revert to the display to Parameter List mode. The display will again alternate between the parameter name and its new value.

Pressing the M button for more than two seconds will cause the display to revert to the Parameter List mode without saving the changed parameter value.

When in either Parameter List mode or the Parameter Edit mode, if no button is pressed for 20 seconds the display will revert to the default display without saving any changes.

For units with firmware versions before V2.08, the user must ensure that parameter changes are permanently saved, and are available after a power cycle. To achieve this, exit the Parameter Edit mode by pressing and holding the M button whilst in the Parameter List mode.

For units with firmware versions later than V2.08, the unit will automatically permanently save parameter changes without having to explicitly exit the Parameter Edit mode.

5.3.3 Parameter list

The following parameters can be edited in Parameter Edit mode.

Parameter	Editable	Description	Default
Addr	Yes	Set the comms address	1
Tare	Yes	Set the display tare value - this value will be subtracted from the measured load before it is displayed	0
Unit	Yes	Set the display units to metric (kg) or imperial (lbs)	kg
Max	Yes	Set the load over which the display will flash "tmax"	0 - no trip
Min	Yes	Set the load under which the display will flash "tmin"	0 - no trip
Disp	Yes	Set the display to YES or NO	YES
Log	Yes	Display the maximum load read by the cell since the log was last reset	0
Rate	No	Rating of the cell (maximum load)	
Date	No	Calibration date (MMYY)	

6. Adjusting the zero offset

The Libra Cell is calibrated when it leaves the factory. During the unit’s lifetime the zero point can drift slightly, resulting in reduced accuracy. This is often seen as the Libra Cell registering a weight when not under load.

If this occurs, the user has the option to correct a maximum drift of 40 kg. If the value to correct is larger than 40 kg, contact your Kinesys or supplier to arrange a repair.

To calibrate the zero value, power on the Libra Cell whilst pressing the Down button. The unit will display "CAL" instead of the version number to indicate the calibration action taken by the user. When the unit finishes the rebooting process, the display must show a load value of 0 kg to confirm the calibration is complete.

7. Product specifications

Feature	Specification	
	3,35 t	**4,75 t**
Power supply	9-24 V from Libra Pro or Libra Basic	
Connections	• XLR4 Power and Data Input • XLR4 Power and Data Output/Thru	
Shackle heigh max	106 mm (4.2 in)	126 mm (5.0 in)
Shackle width max	74.5 mm (2.9 in)	89 mm (3.5 in)
Shackle thickness	17.5 mm (0.7 in)	20.6 mm (0.8 in)
Case dimensions (L x W X H)	92.5 mm x 38.5 mm x 27 mm (3.6 in x 1.5 in x 1.1 in)	
Load capacity	3250 kg (7165 lbs)	4750 kg (10472)

8. Service & End of Life

In the event of a product being considered beyond economic repair it should be disposed of with care and in line with local legislation on disposal of Waste Electrical and Electronic Equipment (WEEE).

In Europe WEEE shall be disposed of in accordance with European Union Directive 2012/19/EU.

In most regions of the world, similar legislation exists to ensure that WEEE is handled separately to maximise reuse of materials and avoidance of landfill.

8.1 Calibration procedure

If a customer sends back a Libra Cell for calibration, the following conditions apply.

- If the shackle and load pin are a matched pair, Kinesys will calibrate and return to the customer.
- If the shackle and load pin are an unmatched pair, a tag will be affixed to the shackle on the same side. This way, it's clear which pair have been matched without erasing the original serial number on the shackle. Kinesys will the calibrate and return to the customer.
- There is no service process change for old shackles without serial numbers marked on them.

8.2 Spare parts list

Mechanical parts may be reordered using the following information. Any Libra Cell with an electrical failure must be returned to Kinesys for rework.

3,25 t

Part	Kinesys part number
3,25 t Load Pin and Crosby Shackle G2130 with Bobbin	7660420
Bobbin for 3,25 t Loadcell (2017 onwards)	7660430
Bobbin for 3.25 t Loadcell (pre 2017)	7660410
Nut (2017 onwards)	7660432
Nut (pre 2017)	7660412
Safety 'R' Clip	7590100
Anti-rotation Bracket	7002053
Screw for Anti-rotation Bracket	7514305
Enclosure (including lid)	7002043
Label for Enclosure	7694201

4,75 t

Part	Kinesys part number
4,75 t Load Pin and Crosby Shackle G2130 with Bobbin	7660421
Bobbin for 4,75 t Loadcell (K26830 to K26946)	7660434
Bobbin for 4,75 t Loadcell (2017 onwards)	7660431
Bobbin for 4,75 t Loadcell (pre 2017)	7660411
Nut (2017 onwards)	7660433
Nut (pre 2017)	7660413
Safety 'R' Clip	7590100
Anti-rotation Bracket	7002051
Screw for Anti-rotation Bracket	7514305
Enclosure (including lid)	7002043
Label for Enclosure	7694201

9. Declaration of Conformity

ORIGINAL

EC Declaration of Conformity

Manufacturer: Kinesys Projects Limited

of the address: Unit 2 Kempton Gate, Oldfield Road, Hampton, Middlesex, TW12 2AF, UK

in accordance with the following EC directive: **EMC Directive 2014/30/EU**

declares that the products: **Kinesys Libra Cell 3.25T**
Kinesys Libra Cell 4.75T

are in conformity with the applicable requirements of the following harmonised standards:
EN 61326-1:2006 **Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements.**

The manufacturer hereby declares that the products named above have been designed to comply with the relevant sections of the above referenced standards. The units comply with all applicable essential requirements of the directives.

In the EU the party authorised to compile the technical file is:
TAIT Netherlands B.V.
Weesperplein 4a, 1018 XA Amsterdam, The Netherlands
In the UK the party authorised to compile the technical file is:
Kinesys Projects Ltd.
Unit 2 Kempton Gate, Oldfield Road, Hampton, Middlesex, TW12 2AF, UK

Equipment referred to in this Declaration of Conformity was first manufactured in 2009.

D Weatherhead
Managing Director
Hampton, November 2024

The attention of the specifier, purchaser, installer, or user is drawn to special measures and limitations to use which must be observed when these products are taken into service to maintain compliance with the above directives. Details of these special measures and limitations to use are available on request and are also contained in the product manuals.

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